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G02-1463 Indoor Air Quality: Know the Asthma Triggers in the Home

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Indoor Air Quality

Know the Asthma Triggers in the Home

This publication discusses asthma triggers sometimes found in the home and possible solutions. It is intended to help manage and reduce possible indoor triggers. Medical professionals should be consulted first and their recommendations followed.

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Asthma, a serious lung disease, is the leading cause of long-term illness in children. Asthma affects 112,100 Nebraskans, of whom 75,000 are adults, and 37,100 are youth (1998), and is on the rise. While the U.S. death rate has decreased since 1993, Nebraska's rate has increased to second highest in the nation.¹ The highest death rate is among blacks, females and those 65 years of age and older.¹ The health consequences of asthma per year in the U.S. include over 5,000 deaths, 479,000 hospitalizations, 100 million days of restricted activity and \$11 billion in costs.

Not all asthma triggers are listed here. Consult a health professional for more information about asthma, potential triggers, and how to manage specific problems. The following information is not a substitute for professional medical help and your doctor's recommendations.

What Are Some Asthma Triggers in the Home?

The National Academy of Sciences has found that there is a link between the development of asthma in children and indoor exposure to house dust mites and environmental tobacco smoke (pre-school children).² They also indicate that there is a causal relationship between worsening asthma and pet (cat and dog) dander, cockroaches, house dust mites, environmental tobacco smoke (secondhand smoke), fungi and molds, the common cold, and nitrogen dioxide and nitrogen oxides.²

Allergens and irritants in homes may trigger asthma attacks. By controlling their environment, people may possibly reduce their risk of an asthma attack, prevent asthma from getting worse, and perhaps avoid the onset of asthma entirely. A discussion of common household triggers and potential management methods to reduce the triggers in the home follows.

Secondhand Smoke

Environmental tobacco smoke or secondhand smoke may aggravate symptoms in asthmatic children, and may be a risk factor for new cases of asthma in children. Children exposed to secondhand smoke also are more likely to suffer from pneumonia, bronchitis and other lung diseases as well as ear infections. Children whose mothers smoked during pregnancy tend to be born with smaller airways, increasing their chances of developing asthma.

- Choose not to smoke in your home or car, and do not allow others to do so. Smoke particles linger on walls and other surfaces, and continue to give off particles and gases after smoking has stopped.

Combustion Products

Combustion products such as soot and smoke and gases such as sulfur dioxide and nitrogen dioxide can cause breathing problems in children with asthma.

- Have heating and cooking equipment, such as gas ranges, serviced yearly.
- Provide adequate exhaust and intake ventilation to the combustion equipment. Use range hoods that exhaust to the outside.
- Limit or avoid the use of wood-burning stoves, kerosene heaters, fireplaces and candles.

Dust

Dust contains more than 5,000 ingredients including fibers, dander, soil, bacteria, molds, smoke residues, pesticides, dust mite allergens, skin flakes and insect body parts.

- Use smooth, easy-to-clean surfaces and washable items.
- Damp clean to remove dust to prevent it from becoming airborne.
- Use vacuums with filters that catch and retain the dust such as High Efficiency Particle Air (HEPA) filters.
- Change or clean heating and cooling system filters as directed by manufacturer.
- Leave shoes at the door, and switch to different shoes or slippers. Wipe pets' paws as they enter.
- Use rugs or mats on the inside and outside of entrance doors. (At least 6 walking steps inside and outside.) Wash rugs weekly.
- Remove old carpet and pad that may have deep imbedded dust, pollen and dust mite parts, etc.

Dust Mites

Dust mites are microscopic creatures and one of the principal irritants in house dust. They live in warm humid places and in soft furnishings such as mattresses, pillows, carpets, fabric-covered furniture, bedcovers, clothes and stuffed toys. They are difficult to control.

- Reduce humidity to about 30 percent to 45 percent and use good cleaning strategies.
- Cover mattresses, box springs and pillows with covers labeled for dust mite control.
- Wash all bedding each week in hot water (130°F) to reduce the dust mites and their deposits or parts.
- Avoid comforters or furnishings that are more difficult to wash or clean.
- Replace pillows and quilts every year or two for particularly sensitive persons.
- Use hard surfaces in the bedroom including floors, furnishings, and window treatments for ease of cleaning.
- Remove clutter and stuffed toys. Keep toys off of the bed. Select toys that can be washed or are

hard surfaced. Some toys can be put into the freezer overnight to kill dust mites.

Pets

Animal skin flakes, urine and saliva can be asthma triggers. Cats and rodents are more likely to be triggers than dogs.

- If a pet is a trigger, keep the pet out of the bedroom and sleeping areas, outside, or find a good home for it.
- Keep pets away from fabric-covered furniture, carpets and stuffed toys.
- Select a pet that is not an asthma trigger for the individual.

Molds

Molds are microscopic fungi that live on plant or animal matter. Growth is encouraged by warm and humid conditions. Molds are naturally occurring and are found both indoors and outdoors. Certain molds may be toxic to some people. Mold should be handled with respect due to the potential health risk. Hire a professional to clean up mold if you choose to reduce the risk of your exposure while cleaning.

- First control moisture. Reduce humidity to below 45% or 50%.
- Stop all unplanned moisture sources and leaks, keep all surfaces dry and fix leaks. Clean out downspouts and gutters and use downspouts to move water at least six feet from foundation. Slope soil at the foundation away for drainage; seal foundation cracks.
- Don't allow water to stand or seep inside or out.
- Use exhaust vents in bathrooms and over ranges to move moisture to the outside. Vent dryers to the outside.
- Clean refrigerator drip pans and dehumidifiers often.
- Avoid placing carpet on basement floors that may wick moisture.
- To manage a small amount of mold, correct the water or humidity problem and have the mold cleaned up.

Household members, especially infants and sensitive persons, should not be present during cleanup.

Wear gloves, protective clothing and a full mask or hire a professional to reduce the risk.

Work in a well-ventilated area.

Using a general purpose cleaner, clean the mold from hard surfaces trying not to spread the spores.

Follow with a disinfectant (about one cup household bleach and one gallon of water).

Disinfectants may not kill mold spores. Keep the area wet for 15 to 30 minutes (*Do not mix cleaners.*)

Thoroughly dry the area.

Carefully discard small amounts of wet or moldy absorbent materials such as ceiling tiles, soft furnishings and carpet. Wrap the items in plastic to seal before removal to avoid spreading spores.

Insects and Rodents

Exposure to household pests (such as cockroaches and rodents) can trigger asthma in some individuals. Many people with asthma are allergic to the dried droppings and cast off skins of cockroaches.

- Keep all food and garbage in sealed air tight containers. Keep surfaces storage areas clean.
- Control water leaks. Get rid of standing water.
- Dispose of cardboard boxes and clutter.
- Seal openings around water pipes and other cracks where pests may enter. Seal around doors, windows and around and in cabinets.
- For pest control, use the least toxic product for the job. Read the label. Limit the treatment area, provide plenty of ventilation and keep asthmatic individuals out of the area.

Pollen

Typical pollens to which people are allergic include grasses, ragweeds and pine, birch and oak trees. Pollens enter through doors, windows and other home openings.

- Use quality doors, windows and screens. Fix holes in screens and windows.
- Caulk and weatherstrip.
- Keep doors and windows closed and the air conditioning on during peak pollen seasons.
- After spending time outdoors in pollen seasons, shower and change clothes to avoid spreading pollen indoors.
- Place rugs at the outside and inside of all entrance doors (6 walking steps) and wash weekly.
- Vacuum with an efficient vacuum that has a HEPA filter, and use appropriate sized air cleaners or filters. Wet clean or damp mop where possible.

Volatile Organic Compounds

Volatile organic compounds (VOCC's) are gas pollutants and chemicals that can evaporate. They are found in such things as building materials, paints, glues, pesticides, solvents, and cleaners. Formaldehyde found in building materials is a VOC.

- Avoid storing solvents; buy only what you need.
- Keep container lids tight.
- Read labels on containers. Choose water-based products and non-aerosol products when choices are available.
- Choose unscented products.
- Keep VOC's stored in a detached storage unit or area if possible.

Other Potential Asthma Triggers

There are many other asthma triggers. Personal care products and perfumes may be triggers for some. Ozone is a lung irritant and may aggravate asthma. It increases the risk of harmful respiratory effects - especially in children.

People with asthma should work with their physician and health care professionals to determine specific pollutants that trigger asthma, how to reduce the triggers, and how to manage their asthma.

Summary

Indoor air pollutants can trigger asthma attacks and may lead to its onset. Total elimination of triggers may be unrealistic. The methods chosen to reduce or eliminate triggers depend on the pollutant source, extent of asthma triggers for that individual, medical recommendations, and feasibility of control. Steps to manage pollutants in order of effectiveness, include:

After medical recommendations:

1. Identify and reduce the pollutant at the source.
2. Ventilate - mix or dilute pollutants with fresh outside air and exhaust pollutants.
3. Use air cleaners (such as HEPA filters) after source control and ventilation. (Ozone air cleaners can aggravate lungs and trigger asthma attacks.) Evaluate air cleaners by the type and percentage of air particles removed, and the volume of air filtered during a specific time period. Air cleaners are generally not designed to remove gases, although those with charcoal will do some removal but need careful maintenance.

References

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¹Nebraska Health and Human Services System (2001, March). Nebraska Epidemiology Special Report.

²National Academy of Sciences Asthma Report.

Acknowledgments

Rebecca Versch, Carol Plate and Mary K. Warner.

This publication is a part of the Healthy Indoor Air for America's Homes. It was originally developed by Shirley Niemeyer, Dave Keith and David Morgan, UNL Extension Specialists and Sharon Skipton, Susan Hansen, George Haws, Rebecca Versch, Mary K. Warner and Carroll Welte, UNL Extension Educators.

***File G02-1463-A under HEALTH AND SAFETY
B-1K, Practices for Optimum Health
Issued May 2002, 1,500***

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Elbert C. Dickey, Dean and Director of Cooperative Extension, University of Nebraska, Institute of Agriculture and Natural Resources.

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